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From the Journal of the Cincinnati Society of Natural History, October, 1886.

THE GEOLOGY AND TOPOGRAPHY OF CINCINNATI.

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PART II.

TOPOGRAPHY.

(Read August 3rd, 1886.)

Turning from the Geology to the Topography of the City, we find many interesting features developed. The so-called hills, which rise to the north, are of heights varying from three hundred and ninety-six feet above low water, the stated height of Mt. Adams, equal to eight hundred and twenty-eight feet above the sea, to four hundred and sixty feet given for Mt. Auburn, or eight hundred and ninety-one feet above the sea.

It is almost impossible to conceive a correct idea of the appearance of the site of Cincinnati before it became a city. The pictures we have, which pretend to show its appearance in 1802, or fourteen years after its first settlement, represent the two terraces to be nearly bare of trees, a few clumps appearing here and there only, but the hills and valleys to the north are represented as densely clothed with forest trees. They recede from the river to the westward, and in one view six elevations are shown with depressions between them. These hills, as we may for convenience call them, were originally rounded on top, and with sloping sides, but are now so cut away and seared with streets as to have lost much of their original form.

There still remain, however, the great drainage valleys which have, for ages, carried the water from the north, south into the Ohio river. None of them, except Mill Creek, which, as shown in the first part of this paper, now occupies part of the ancient channel of the Ohio, are of any great extent, and this is one fact tending to prove the former insular character of the suburban parts of Cincinnati. The most eastern one of these valleys emptying into the Ohio is Crawfish Creek. This divides Mt. Lookout from Walnut Hills, forming a broad plain at its mouth, always overflowed by high water in the Ohio, and it heads up several miles in the country, now covered by part of East Walnut Hills.

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The next valley to the west is Deer Creek, and this separates Mt. Adams from Mt. Auburn, and is of less extent than the first one. For the extreme northern end of this valley is south of Oak Street, Mt. Auburn, less than two miles from the river, and it here meets a ridge which divides it from a valley draining to the northward.

The third of these valleys is that between Mt. Auburn and Clifton Heights, and is even shorter than the second one, finding its head, also, at the ridge before spoken of.

Still further west is a yet shorter but steep valley, and then there are no others until the broad valley of Mill Creek is reached, and this is bounded on the other side by the long range of which Mt. Harrison is a part.

While all these valleys and their attendant heights have added greatly to the picturesqueness of the city, they have, at the same time, been taken advantage of in the building up of the suburbs. The heights have been utilized for dwellings, while the valleys between have proved invaluable for streets. Mt. Tusculum, Mt. Lookout, Mt. Adams, are all dotted with residences. Walnut Hills has become a city in itself, in many places as compactly and solidly built up as the business centre; while Crawfish and Deer Creeks have been found of the greatest service in giving access to the country on either side, and to the northward. Mt. Auburn and Clifton Heights each occupy a peculiar position on a long, narrow tongue of land projecting southward and ending in abrupt precipitous banks, to ascend which steam has been evoked. Both ridges are so narrow as to admit of but one street and a row of houses on each side. Back of the houses the ground slopes rapidly down into the ravines, and this narrow space has been the cause of the stationary condition of these two suburbs, while Walnut Hills has gone on so rapidly expanding.

The two tongues of land are similar in another respect, for while they both jut southward and end abruptly, their northern ends abut against an east and west ridge which forms a connecting link between the most western limit on Mill Creek and East Walnut Hills. This ridge forms indeed the water shed, the divide between the drainage directly into the Ohio river, to the southward, and the round about passage into Mill Creek, to the northward. The village of Avondale lies on the north side of this ridge, and thus can by no possibility drain its sewage into the Ohio river except through the medium of Mill Creek or Duck Creek.

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While the ridges have, as shown, been utilized for the purposes of residences, the valleys have been equally serviceable for streets and roads. Crawfish Creek, for example, is used not only by a wagon road, but by the Mt. Lookout Dummy Railroad. Deer Creek valley serves for the Northern Narrow Gauge, Hunt street and Gilbert Avenue. The ravine between Mt. Auburn and Clifton Heights serves Vine Street an excellent purpose, in climbing to the top, by a long, gradual slope. The ravine next west is used by Clifton Avenue, while the great Mill Creek valley is of incalculable advantage to numerous railroads and the Miami Canal, enabling these to reach the heart of the city with no grades of any consequence whatever.

The tracing of the divide, which separates the Ohio river drainage from that of Mill Creek, is an interesting matter. Investigation shows it pursues a general north-east and south-west direction, and for part of its course can still, with all the changes attendant upon the building of a large city, be followed in quite a definite manner. Beginning at the extreme southwest end, at a point overlooking Mill Creek, we find it follows a line to the north-east, and touches the western end of Calhoun street in Clifton Heights. It then turns east and follows a little to the south of Calhoun, across to Mt. Auburn, and forms the ridge which has already been referred to, as the north end of the spurs, occupied by Ohio and Auburn Avenues. Just where Calhoun street and Ohio Avenue come together there is a deep ravine, trending to the south, through which the water is carried to the Ohio river, and up the lower part of which Vine street has been built. On the north side of Calhoun is another deep ravine, which trends northward, finally forming part of Burnet Woods Park, and carrying other water into Mill Creek somewhere near Ross Lake. Calhoun street is, in most places, just wide enough for the road-way and houses on each side, and back of the houses the ground slopes rapidly north and south. Following the divide, as it is now plainly seen to be, to the eastward, we find that the Mt. Auburn water tanks, on Auburn Avenue, stand upon it, that Auburn street follows its winding course, and is of the same character as Calhoun street, namely, just wide enough for the road-way and houses on each side. When Highland Avenue is reached the divide trends northeast again, and upon its highest point is situated the house of John Shillito. Thence it follows Oak street to the Reading road,

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crossing this, and taking a southeast course toward Crown street, and then diagonally southeast to Macmillan. Along Macmillan to Gilbert Avenue seems next its course, and then from the junction of these two streets it goes diagonally to the bluff, south of Macmillan street, and immediately over-hanging the river. Here it ends abruptly, and all the drainage of East Walnut Hills is carried east and north into ravines running into Crawfish and Duck Creeks, and far north into Mill Creek.

The peculiar features of ravines, heading up on both the south and the north sides of the divide, reminds one of the remarks of Capt. Dutton, quoted in part one of this paper, that in mountainous countries the ravines form a series of amphitheatres close to a narrow divide which remains sharp in all stages of erosion. We find this to be exactly the state of affairs on Calhoun and Auburn streets, for there, on both north and south sides, the heads of ravines come up close to the narrow knife-like water shed.

While the Mt. Auburn and Ohio Avenue ridges project to the southward of the divide, there are others of a similar character on the north. One of these runs in a long, beautifully gentle slope through the western side of Burnet Woods Park, and the other is utilized by upper Vine street and Ludlow Avenue. The two latter form the main streets of Corryville, and if the former ridge were not a portion of Burnet Woods, there is no reason why it should not have built upon it a new suburb equal, if not superior, in beauty, to Clifton Heights and Mt. Auburn.

Walnut Hills, on the contrary, occupies no such pronounced tongue of land, but covers, with its fine residences, a vast undulating tract, the most level of all that remains of the plateau which once existed. Avondale, too, occupies a similar rolling tract of country, and is also situated on the northern slope of the divide, so that all its drainage flows into Mill Creek to the northward, though eventually into the Ohio.

On the east side of Avondale, beginning about half a mile from Macneale Avenue, is one of the most beautiful valleys in the neighborhood of the city. At its upper or southern end it is rather narrow, and through its centre wanders a small brook. As we go down the valley widens and deepens. The little brook becomes larger and cuts deep into the rich soil, and the green hill-sides rise on either hand with few or no trees. Toward the lower end trees become more abundant, but in no case do they form a thick

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growth, and there is no appearance of their ever having done so. In one place where a lateral ravine comes into this wide one are several granitic boulders, evident waifs from some far away source, probably deposited by an ancient glacier which had here stopped and melted.

On the northwest side of Avondale is another deep ravine still covered with the original forest, and deep down in its shady recesses meanders a little brook which carries away the surplus water to its final resting place, Mill Creek. This ravine, unlike the first one, is still clothed with the primeval forest, and huge giants some of the trees are. This is a favorite picnicing place, and here too, children and their elders go in spring to gather wild flowers. The Carthage Pike crosses this ravine near its lower end, where it has lost all its forest beauty from having been used for so many years as part of a dairy farm.

The Rev. G. F. Wright, of Oberlin College, Ohio, after making an exhaustive study of the glaciated surface in Pennsylvania, Ohio and Indiana, found that the southern foot of the continental glacier crossed the Ohio river somewhere near Point Pleasant, about twenty-five miles above the city, and extended a short distance into Kentucky, recrossing the Ohio at Aurora, Indiana, and thus blocked the course of the stream for about fifty miles.*

In commenting upon this circumstance another writer, Prof. I. C. White, estimates the height of this glacial dam at 645 feet above low water in the Ohio river at Cincinnati.† Now the highest land at present about our city is 460 feet above low water mark. I have examined many places on the tops of the hills in this city, and on none of them have I seen any traces of glacial drift. The bedded rocks are close to the surface, and only have on top of them such soil as would have been naturally formed by the disintegration of the rocks themselves. That there is glacial drift near the bases of the hills and in the valleys can not be denied, for the evidence is everywhere abundant, but that it ever existed on top of the highest ground about this city, I do not think can be proved. It therefore remains a question whether the icy barrier could have reached any such height as six hundred and forty-five feet above low water, and thus covered the highest ground with a mass of debris of which no trace remains.

*Abstract in *Proc. Am. Asso. Adv. Sci.*, vol. XXXII., p. 207.—See also *Ohio Geol. Vol. V.*, p. 750, *et seq.*

†*Ibid.*, p. 213.

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From all the facts given in this paper, it is easy to see the interesting features of our city's surroundings. The broad, deep stream of the Ohio, which, passing our city in a graceful curve, gives life to many thousand square miles of country, the two gravel terraces, the wonderfully carved plateau, with its diversified aspect of valley and ridge, its deep ravines and its gentle slopes, together with its vast store of fossil remains, famous the world over, these are its attractions. Nor is this all, for, situated on part of the oldest dry land in the Western World, its site can boast an antiquity which puts to shame many more renowned cities. And while New Orleans has been founded upon a soil which is yet saturated with its baptismal shower, Cincinnati has planted herself on rocks hoary with the age of countless centuries; rocks which form the everlasting hills; rocks which were gray with moss when the site of Louisville was fathoms deep beneath the ocean waves; when that of St. Louis was as yet scarcely even in the process of formation; long before even the grandeur of the Rocky Mountains was revealed to the wondering vault of heaven, or the Mississippi babbled a tiny brooklet among the Archean Mountains of the far north. Thus we can boast an antiquity far greater than many other American cities. And, though the settlement made by man has not yet attained to its hundred years, its foundations date far back into the earliest history of the earth; to a time, compared with which the epoch of man himself, upon our rolling globe, is but the fragment of a minute in the long roll of countless centuries.